

On Solar Thermal Electric Power Capacity Sizing

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Parabolic dish technology has for the most part to date been borrowed from existing and expensive microwave dish technology rather than designed to accomodate electrical generating schemes with a good probability of success in practical applications. Studies by this author of the possible uses of various engine/generator designs and sizes with dishes, show that the most immediate possibilities for implementation are in a 3Kw (10m²) size capable of versatility of application and marketing, which assists also in compensating for inadequate developmental funding availability.

Innovation in dish design has produced a 10m² dish at a cost level compatible with DOE goals under STPP for 1990 in conjunction with a 3Kw generator design. The production cost problems of a 3Kw size module may soon be solved. It remains for a suitable generator to be developed and tested at what are reasoned to be comparable cost levels in order to achieve the over-all DOE objectives.

(1) The 10m² range has a simplicity and ease of maintenance which is a function of its size.

(2) Existing labor forces and plant capacity now unused are readily available and adaptable to the production of small modules.

(3) Off-site construction will contribute to lower capacity costs.

(4) Average residential energy requirements in the U.S. @ 600+w/Hr make a 3Kw a slight producer in the consumer/retail market.

(5) Versatile markets are available: utility, commercial, and retail consumer - which will speed implementation.

(6) Component hardware is readily available and compatible.

(7) The smaller size is a more productive use of a given land area.

In summary, over-all economic conditions now extant indicate that a 3Kw 10m² dish/generator module stands up against the larger sizings as lending itself to the most rapid development and the greatest marketing versatility. It therefore stands the best chance of success over the next five to ten years for commercialization.